

Loring BioEnergy, LLC)	Department
Aroostook County)	Finding of Fact and Order
Limestone, Maine)	Air Emission License
A-880-71-D-M)	Minor Revision #3

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

Introduction

Loring BioEnergy, LLC (LBE) is a proposed electrical generation facility to be located at the former Loring Air Force Base in Limestone, Maine. LBE has submitted a written request for a minor revision to extend the authorization to construct for an additional 18 months. Also, LBE requests greater flexibility in determining the turbine manufacturer and nominal size than what the current license provides.

The LBE project was licensed for a new combustion turbine, combustion turbine generator, duct-fired heat recovery steam generator (HRSG), and a steam turbine generator to produce electric power and process steam for sale. LBE is licensed to produce approximately 55 megawatts (MW) of electric power during the summer and 70 MW during the winter (actual electricity production will vary depending upon atmospheric conditions).

II. APPLICATION CLASSIFICATION

LBE has submitted a letter requesting that the approval to construct the proposed facility as provided by the original air emission license A-880-71-A-N and subsequent amendments be extended for an additional 18 months. LBE is also requesting flexibility with the final turbine selection. There will be no increase of emissions associated with these requests. Therefore, this licensing action is processed as a minor revision.

III. MINOR REVISION REQUEST

Construction Extension Time-frame

LBE was issued an air emissions license on July 19, 2004 for the construction and operation of a gas turbine cogeneration facility at the former Loring Air Force Base in Limestone. Condition #3 of the Standard Conditions in Air Emissions License, A-880-71-A-N, states that approval to construct the facility shall become invalid if the licensee does not commence construction within 18 months of license issuance (i.e., January 19, 2006). On December 12, 2005, the Department issued Minor Revision #1 to the initial air license, allowing LBE an 18-month extension (or until July 19, 2007) to begin construction of the facility.

While LBE has made significant progress in developing the project, additional time is needed to complete negotiations on the power distribution agreement and to secure project financing. Therefore, LBE requests that the Department extend LBE's authorization to construct by an additional 18 months, or until January 19, 2009.

The emission control technologies that are required in LBE's air license still represent the Best Available Control Technology (BACT) for the proposed facility. This includes the use of either water injection or dry low NOx combustors for gas or liquid fuels to reduce NOx emissions from the combustion turbine; a low emissions design duct burner; and selective catalytic reduction (SCR) to reduce the resulting NOx emissions formed during combustion. BACT also requires the use of an oxidation catalyst to control emissions of CO and VOC. The license requirement to use pipeline quality natural gas, low sulfur fuel oil and/or biodiesel (as approved in Minor Revision #2) also still represent BACT for minimizing emissions of particulate matter and sulfur dioxide.

The dispersion modeling analysis performed in support of LBE's initial air license demonstrated that the facility's maximum predicted impacts are considerably lower than applicable ambient air quality standards. There have not been any significant changes to air quality conditions in the project area since the issuance of the initial license.

Turbine Selection Flexibility

LBE is currently pursuing the opportunity to operate its proposed gas turbine cogeneration facility on biodiesel fuel. To achieve this goal, the current turbine manufacturer plans to provide performance and emissions warranties on its combustion turbine (General Electric Model LM6000) when firing biodiesel. LBE is

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considering the use of an LM6000 turbine to meet their project needs. The LM6000 turbine uses water injection for NOx emission control for both gas fuel and liquid fuel. However, when LBE's initial air license was issued, LBE was considering the use of a GE Frame 6B turbine, which uses Dry Low NOx combustors for gas fuel and water injection for liquid fuel. As a result, license condition #16 (specifically 16A, 16D and 16F) refers specifically to the use of Dry Low NOx combustors. In order to provide LBE flexibility in its turbine selection, LBE has requested this minor revision to change the NOx emission control method identified in Condition #16 to the use of water injection for liquid fuels, and either Dry Low NOx combustors or water injection for gas fuels; along with the proposed Selective Catalytic Reduction system.

The emissions profile and stack exhaust gas conditions for the LM6000 option under consideration is very similar to those for the Frame 6B. The expected stack exhaust temperatures are essentially the same. The anticipated stack-top diameter for the LM6000 (10 feet) is somewhat smaller than for the Frame 6B (12 feet), resulting in higher gas exit velocities and slightly better plume dispersion. For a given ambient temperature and turbine load condition, the LM6000 also has a slightly lower fuel firing rate requirement. Therefore, under the LM6000 option, LBE will be able to meet the emission limits contained in the current air license. While the LM6000 has a lower fuel firing rate, its nominal electric power output in simple cycle mode (48 Megawatts at ISO conditions) is slightly higher than the Frame 6B (42 MW). This is accomplished in part by spraying atomized water into the compressor section of the turbine, thereby reducing gas temperatures and increasing mass flow through the turbine. Therefore LBE, has requested per this minor revision that the nominal electric power rating of 42 MW currently contained in Condition 16A be deleted, as that value is only applicable to the Frame 6B. LBE may also consider other manufacturers for similarly sized turbines and emission profiles.

Conclusion

LBE is granted, through this minor revision, an extension to begin construction for an additional 18 months, or until January 19, 2009. Also, Condition (16) will be updated to allow for greater flexibility of turbine selection.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and

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- will not violate applicable ambient air quality standards, or increment standards either alone or in conjunction with emissions from other sources.

Therefore the Department grants this minor revision A-880-71-D-M, subject to the conditions found in air emission license A-880-71-A-N, subsequent amendments, and in addition to the following condition:

(1) The following shall replace Condition (16)A, (16)D, and (16)F of Air Emissions License, A-880-71-A-N.

(16) Electric Generating System

- A. The Loring BioEnergy facility electric generating system shall consist of a combustion turbine generator along with a duct burner with a maximum heat input capacity of approximately 300 MMBtu/hr. [MEDEP Chapter 115]
- D. LBE shall operate the unit with water injection for liquid fuels, and either dry low NO_x combustors or water injection for gas fuels and a Selective Catalytic Reduction (SCR) system to reduce NO_x emissions. [MEDEP Chapter 115, BACT]
- F. Emissions from the LBE stack shall not exceed the following limits, except during startup, shutdown, and fuel transfer conditions. These limits apply both during duct burner firing, and when the duct burner is not being fired. The emission limits listed for #2 fuel oil apply if either the combustion turbine or the duct burner is firing #2 fuel oil. For any calendar day or portion thereof in which #2 fuel oil is fired in either the combustion turbine or duct burner, the 24-hour block average NO_x emission limit for #2 fuel oil shall apply to that calendar day: [MEDEP Chapter 115, BACT]

Pollutant	ppmvd	Natural Gas (lb/hr)	#2 Fuel Oil (lb/hr)	Control Technology
PM ₁₀ *	--	19.8	35.8	Natural gas/low sulfur distillate
SO ₂	--	5.4	47.3	Natural gas/0.05% S fuel limit
NO _x	--	6.6 (24-hour block average)	14.1 (24-hour block average)	Water Injection or Dry Low NO _x Technology, & SCR
CO	--	10.7	15.1	Oxidation Catalyst & Good Combustion Control
VOC **	--	9.9	13.7	Oxidation Catalyst & Good Combustion Control
NH ₃	20 @15% O ₂ 5 @15% O ₂	24 hour avg 30-day rolling avg	--	Good Engineering Practices

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* as measured using EPA Method 201 or 201A for filterables and EPA Method 202 for condensables

** Expressed as non-methane VOC, as measured using EPA Method 25A

- (2) LBE is granted an extension to begin construction for an additional 18 months beyond the date allowed for in Minor Revision, A-880-71-B-M, or until January 19, 2009.

DONE AND DATED IN AUGUSTA, MAINE THIS _____ DAY OF _____ 2007.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
DAVID P. LITTELL, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-880-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 7, 2007

Date of application acceptance: June 19, 2007

Date filed with Board of Environmental Protection: _____

This order prepared by Edwin L. Cousins, BAQ